1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Determination of the dispersion of sulfuric acid mist. N. A. Fuks. *Zavodskaya Lab.* 6, 210-12(1937); cf. *C. A.* 31, 2482[9], 4170[9].—The method consists in microscopic examn. of the H_2SO_4 globules formed by pptg. the acid

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

FUKS, N. AND ROTSHEIG, B.

"Ultramicroscopic determination of the dimensions of aerosol particles." J. Phys Chem. (USSR) 9, 35-40 1937.

Dimensions of oil fog and NH_4Cl smoke particles were detd. down to a radius of 0.1μ. The method can be used over a wide range of aerosol concn. On rapid mixing with cold air submicroscopic aerosols are obtained.

FUKS, N.

"Scattering of light as a function of the relation of particle size to wave-length." J. Phys. Chem. Russ, 1937, 9, 295-296

Remarks on a paper by Gurevich and Veitser

PA 18/49T4

USSR/Chemistry - Chromatography
Chemistry - Analysis

Jul/Aug 48

"Use of Chromatography in Analytical Chemistry: I, Analysis of Hexachlorocyclohexane," N. A. Fuks, L. S. Shetverikova, Sci Inst of Fertilizers Insecticides and Fungicides, 5½ pp

"Zhur Analit Khimii" No 4

Commercial hexachlorocyclohexane is a very complex mixture. Main components are five stereoisomers with general formula $C_6H_6Cl_6$. Since γ-isomer M. P. 113.5° is considerably more toxic than others, analysis of commercial hexachlorethane boils down to determining it. Describes chromatographic method,

18/49T4

USSR/Chemistry - Chromatography (Contd) Jul/Aug 48

with several improvements devised by author. Discovered new isomer with M. P. 157°. Isolated δ-isomer. Submitted 15 Nov 47.

18/49T4

FUKS, N. A.

Br. Abs.

(4 Gen. Mechanism
  + Lab. Apparatus
  (General)

[illegible]. **Applications of partition chromatography in analytical chemistry.** N. A. Fuks (*Uspekhi Khim.*, 1948, 17, 45—54).—The theory and practice of partition chromatography are expounded, with examples of published analytical applications. R. Truscoe.

FUKS, N. A. PA 76T6

USSR/Chemistry - Amines Jun 1948
Chemistry - Chromatography

"Separation of Ammonia, Methyl-, Dimethyl-, and Trimethylamine by the Method of Distributive Chromatography," N. A. Fuks, M. A. Rappoport, Sci Inst of Fertilizers and Insecticides imeni Ya. B. Samoylov, 3 pp

"Dok Ak Nauk SSSR" Vol LX, No 7

This method may be used to obtain amines in totally pure form. Submitted Mar 1948.

76T6

FUKS, N.A.; KUPERMAN, M.Ye.

Powdered, organic insectofungicide. Patent U.S.S.R. 77,920, Dec.31, 1949.
(CA 47 no.19:10170 '53)

FA 63/49T109

FUKS, N. A.

USSR/Physics [illegible]39
Aerosols
[illegible] Fungicides

"Determining the Size of Droplets, in Oil Mists," N. A. Fuks, Sci Inst of Fertilizers and Insecto-fungicides imeni Prof Ya. V. Samoylov, Moscow, 2½ pp

"Kolloid Zhur" Vol XI, No 4

Basic zinc stearate, but not neutral zinc stearate, may be used as an "undercoating" in determining the degree of dispersion of several oil mists (aerosols). Submitted 7 Oct 48.

63/49T109

1ST AND 2ND ORDERS PROCESSES AND PROPERTIES INDEX 3RD AND 4TH ORDERS

26

b

Progress of Chromatographic Methods in Organic Chemistry. (In Russian.) N. A. Fuks. *Uspekhi Khimii* (Progress in Chemistry), v. 18, Mar.-Apr. 1949, p. 206-236.

Describes theoretical basis of the above method developed by Tswett. Improvements of recent years in adsorption chromatography, especially those by Soviet scientists, are emphasized. 136 ref.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

FUKS, N. A.

USSR/Metals - Aluminum Jul 50

166T68

"Preparation and Standardization of Aluminum Oxide for Chromatographic Analysis of Organic Substances," N. A. Fuks, Sci Res Inst of Fertilizers and Insectofungicides

"Zavod Lab" Vol XVI, No 7, pp 878

Describes process of making activated aluminum oxide, one of basic chromatographic sorbents, from commercial crystalline aluminum hydroxide, its standardization and method of deactivation for obtaining aluminum oxides of lower activities according to Brockman's (Brockman, Berichte, 74, 73, 1941)

166T68

USSR/Metals - Aluminum (Contd) Jul 50

classification. With decreasing activity of sorbent, its adsorptive ability increases. Also describes laboratory preparation of aluminum hydroxide.

166T68

CA

Advances and practical achievements in the field of aerosols. N. A. Fuks. *Uspekhi Khim.* 19, 175-201 (1950).—Crit. review; 91 references. N. Thon

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000513910002-0"

FUKS, N. A.

"Tsvet's Method (Chromatography) in Organic Chemistry," Reakts. org. soyed., No.1, 1951

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000513910002-0"

PROCESSES AND PROPERTIES INDEX

5

189

EFFECT OF DUST ON TURBULENCE OF A GAS STREAM. N. A. Fuks. Zhur. Tekh. Fiz. 21, No. 6, 704-7(1951) June (Letter to the editor, in Russian)

The increase in effectiveness and decrease in hydraulic resistance of a cyclone dust extractor with increasing dust concentration apparently is explained by a decrease in turbulence of the gas stream effected by friction of the pulsating gas on dust particles.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

DUBININ, M.M., akademik, otvetstvennyy redaktor; GAPON, Ye.N.; GAPON, T.B.; ZHYPAKHINA, Ye.S.; RACHINSKIY, V.V.; BELEN'KAYA, I.M.; SHUVAEVA, G.M.; ROGINSKIY, S.Z.; YANOVSKIY, N.I.; FUKS, N.A.; KISELEV, A.V.: NEYMARK, I.Ye.; SLINYAKOVA, I.B.; KHATSET, F.I.; LOSEV, I.P.; TROSTYANSKAYA, Ye.B.; TEVLINA, A.S.; DAVANKOV, A.B.; SALDADZE, K.M.; BRUMBERG, Ye.M.; ZHIDKOVA, Z.V.; VEDENEEVA, N.Ye.; NAPOL'SKIY, S.A.; MIKHAYLOVA, Ye.A.; KAZANSKIY, B.A.; RYABCHIKOV, D.I.; SHEMYAKIN, F.M.; KRETOVICH, V.L.;BUNDEL', A.A.; SAVINOV, B.G.; VENDT, V.P.; EPSHTEYN, Ya.A.

[Research in the field of chromatography transactions of the All-Union Conference on Chromatography, November 21-24, 1950] Issledovaniia v oblasti khromatografii; trudy Vsesoiuznogo soveshchaniia po khromatografii, 21-24 noiabria 1950 g. Moskva, Izd-vo Akademii nauk SSSR, 1952. 225 p. (MLRA 6:5)

1. Akademiya nauk SSSR. Otdelenie khimicheskikh nauk. (Chromatographic analysis)

FUKS, N. A.

Chemical Abstracts
Vol. 48 No. 5
Mar. 10, 1954
General and Physical Chemistry

Partition chromatography and its place among other chromatographic methods. N. A. Fuks. *Issledovaniya v Oblasti Khromatog.*, *Trudy Vsesoyuz. Soveshchaniya Khromatog.*, *Akad. Nauk S.S.S.R.*, *Otdel. Khim. Nauk* 1950, 56-70(Pub. 1952).—Review of the principles and practical applications of partition chromatography, with 39 references and a list, with references, of 82 org. systems with several components that have been successfully sepd. by this method. Relative advantages and disadvantages of partition and adsorption chromatography are discussed.
G. M. Kosolapoff

FUKS, N.A.; DERYAGIN, B.F., redaktor; YEGOROV, N.G., redaktor; SOMOROV, B.A., tekhnicheskiy redaktor.

[Mechanics of aerosols] Mekhanika aerozolei. Moskva, Izd-vo Akademii nauk SSSR, 1955. 351 p. (MLRA 9:1)
(Aerosols)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000513910002-0"

FUKS, N.A.

USSR/Physical Chemistry - Surface Phenomena. Adsorption. Cheromatography. Ion Exchange B-13

Abs Jour : Referat Zhur - Khimiya, No 2, 1957, 3999

Author : Fuks N.A.
Title : Gas-Liquid Chromatography

Orig Pub : Uspekhi khimii, 1956, 25, No 7, 845-858

Abstract : A review article.
Bibliography 23 references.

Card 1/1 - 229 -

32-12-61/71

AUTHORS: Fuks, N.A., Kazakova, T.P.

TITLE: Shor: Reports (5) (Korotkiye soobshcheniya).

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol. 23, Nr 12, pp. 1520-1520 (USSR)

ABSTRACT: In this paper a new device for the uniform application of dosed suspension solutions on to surfaces is recommended. According to the schematical drawing given, the apparatus consists of a calibrated glass syringe in which a mixer takes the place of a piston. It further has a knee pipe with stop cock and an atomizer, to which the compressed air is conveyed through a connecting tube. For the purpose of stirring the suspension solution before use, connection to a motor is provided for. The diameter of the knee pipe (capillary) and its curvature is selected in accordance with the character of the suspension solution. The plates to be sprayed, which were previously weighed, are laid upon the disk of a gramophone. Because of the centrifugal force this disk is provided with a projection at its edge. Spraying of the plates takes place while the disk performs 20 to 30 revs. per minute. After the coating has been dried, the plates are again weighed, and the increased weight is then equal to the quantity of the suspension coating. There is 1 figure.

Card 1/2

Short Reports (5) 32-12-61/71

ASSOCIATION: Central Scientific Research Institute for Disinfection (Tsentral'nyy nauchno-issledovatel'skiy dezinfektsionnyy institut).

AVAILABLE: Library of Congress

Card 2/2 1. Solutions suspensions-Applications 2. Solution suspensions-Devices

USSR / General and Specialized Zoology. Insects. Harmful Insects and Acarids. Chemical Methods in the Control of Harmful Insects and Acarids. P

Abs Jour : Ref Zhur - Biol., No 18, 1958, No. 82939

Author : Fuks, N. A.; Kazakova, T. P.; Tregubov, A. N.; Klechotova, A. M.; Pogodina, L. N.; Klochotova, A. M.

Inst : Central Scientific Research Institute for Disinfectants

Title : The Clarification of the Reasons for the Low Effectiveness of the Emulsions and the Higher Effectiveness of DDT Preparations

Orig Pub : Tr. Tsentr. n.-i. dezinfekts. in-ta, 1957, vyp. 10, 171-178

Abstract : No abstract given

Card 1/1

10(0) PHASE I BOOK EXPLOITATION SOV/1913

Fuks, Nikolay Al'bertovich

Ispareniye i rost kapel' v gazoobraznoy srede (Evaporation and Growth of Drops in a Gaseous Medium) Moscow, Izd-vo AN SSSR, 1958. 89 p. (Series: Itogi nauki; fiziko-matematicheskiye nauki, 1) Errata slip inserted. 3,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut nauchno-tekhnicheskoy informatsii.

Resp. Ed.: I.V. Petryanov, Corresponding Member, USSR Academy of Sciences; Ed. of Publishing House: K.P. Gurov; Tech. Ed.: S.G. Markovich.

PURPOSE: This book is intended for scientists and engineers interested in the kinetics of the evaporation and growth of droplets.

COVERAGE: With this work the author purports to fill a gap in the existing Soviet and non-Soviet literature on the evaporation and growth of droplets. The book surveys the work accomplished in the

Card 1/3

NOVOTEL'NOVA, N.F.; RAFANOVA, R.Ya.; FUKS, N.A.

Composition of vetiver essential oil. Report No.4. Trudy VNIISNDV no.4:201-205 '58. (MIRA 12:5)
(Essences and essential oils)

FUKS, N A.

AUTHOR: Fuks, N. A. 57-1-21/30

TITLE: On the Theory of Evaporation of Small Drops (K teorii ispareniya melkikh kapelek)

PERIODICAL: Zhurnal Tekhnichoskoy Fiziki, 1958, Vol. 28, Nr 1, pp. 159-162 (USSR)

ABSTRACT: An equation for the evaporation velocity in a gaseous medium of drops with a radius r nearly equal to the mean free length of path λ, is derived. As it can be seen from the theoretical computations (ref. 2) and the direct measurings (ref. 3) the temperature gradient rises considerably with the approximation to the wall beginning with the distance of the order of magnitude λ and reaches a degree much higher than the normal one of the gradient which was computed according to the equation for the heat conductivity. Regarding the similarity of the phenomena of heat conductivity and diffusion in gases this holds good also for the vapour concentration gradient near the evaporation surface. Therefore, the evaporation veriocity at first approximation can be computed assuming that the FIK equation is applicable only at a distance Δ of the order of magnitude λ from the surface of the drops while

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in the layer near the wall of a thickness of Δ the exchange of vapour molecules occurs without difficulties like in the vacuum. The formula given here can be used in the case of any ratio λ/r in contrast with that of the other authors, it also agrees better with the experimental data. The shortcoming of the given computation is the indetermination of the coefficient β occurring in this equation. For the purpose of experimental control of the computations given here only the data of the Bradley Laboratory (ref. 13,14, 16) on the evaporation velocity of liquid drops with very little vapour pressure can be used. The deviation of the experimental data is rather important. In order to be able to judge definitely on the different formulae more precise measurings and experiments with higher λ/r - values must be carried out.

M. A. Leontovich, Member of the Academy, advised the author. There are 1 figure , and 16 references, 3 of which are Slavic.

ASSOCIATION: All-Union Institute for Scientific and Technical Information, Moscow (Vsesoyuznyy institut nauchnoy i tekhnicheskoy informatsii, Moskva)

Card 2/3

AUTHORS: Fuks, N. A., Yankovskiy, S. S. 20-119-6-35/56

TITLE: On the Thermophoresis in an Aerosol Flow (O termoforeze v potoke aerozolya)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 1'9, Nr 6, pp. 1177 - 1179 (USSR)

ABSTRACT: The problem of the magnitude of the forces acting upon the aerosol particles in an unequally heated medium theoretically was solved for 2 limit cases: For very high and for very low values of the ratio d/λ, where d is the dimension of the particles and λ the mean free path length of the gas. In the case of $d \ll \lambda$ the presence of the particle does not disturb the velocity distribution of the molecules. The temperature gradient within the particle is low and may be neglected. In the case of $d \gg \lambda$ the temperature gradient on the surface of the particle plays an essential role, it causes a gliding of the gas along the surface. In these two limit cases the velocity of the thermophoresis does not depend on the size of the particles. The velocity of the thermophoresis must be considerably higher at $d \ll \lambda$ than at $d \gg \lambda$. Only particles of very bad heat conductors are

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On the Thermophoresis in an Aerosol Flow 20-119-6-35/56

described speaks for the fact that the velocity of the thermophoresis in a current continuously increases with the increase of the dimensions of the particles. Finally the inertia and the deviations dependent by Brown's motion are discussed. There are 1 figure and 12 references, 4 of which are Soviet.

ASSOCIATION: Gosudarstvennyy nauchno-issledovatel'skiy institut tsvetnykh metallov (State Scientific Research Institute of Nonferrous Metals)

PRESENTED: January 2, 1958, by A. N. Frumkin, Member, Academy of Sciences, USSR

SUBMITTED: December 28, 1957

Card 3/3

5(4)

SOV/69-21-1-20/21

AUTHORS: Fuks, N.A. and Yankovskiy, S.S.

TITLE: To Methods of Precipitation of Aerosols in a Thermoprecipitator for Electronic Microscope Research. (K metodike osazhdeniya aerozoley v termopretsipitatore dlya elektronno-mikroskopicheskogo issledovaniya.)

PERIODICAL: Kolloidnyy zhurnal, 1959, Vol XXI, Nr 1, pp 133-134 (USSR)

ABSTRACT: A new technique for a thermal precipitation of aerosols on a thin organic film is described. By its means, the usual errors, caused by the preferential settling of the particles on the wires of the supporting net, are eliminated. There is 1 photo and 2 references,1 of which is British and 1 German.

ASSOCIATION: Nauchno-issledovatel'skiy institut tsvetnykh metallov. (The Scientific Research Institute of Non-Ferrous Metals), Moscow.

SUBMITTED: July 18, 1958

Card 1/1

FUKS, Nikolay AL'bertovich; YEGOROV, N.G., red.izd-va; DORCKHINA, I.N., tekhn.red.

[Progress of the mechanics of aerosols] Uspekhi mekhaniki aerozolei. Moskva, Izd-vo Akad.nauk SSSR, 1961. 158 p. (Itogi nauk: Khimicheskie nauki, no.5). (MIRA 14:6)

(Aerosols)

FUKS, N. A.

"Transport phenomena in aerosols with particle size comparable with the mean free path of the gas molecules"
To be presented at the First National Conference on Aerosols - Liblice, Czechoslovakia, 8-13 Oct 1962

Scientific Research Inst. of Fertilizers and Insectofungicides imeni Ya.V. Samoylov, Moscow (1959 position)

S/057/62/032/002/022/022
B124/B102

AUTHOR: Fuks, N. A.

TITLE: Vertical distribution of particles suspended in a turbulent flow

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 2, 1962, 255 - 257

TEXT: According to the theory of steady-state vertical distribution of equal particles suspeneded in a turbulent flow,

$nV_s = -D_{tp}\frac{dn}{dz}$ (1), or $\ln\frac{n}{n_0} = -V_s\int_0^z \frac{dz}{D_{tp}(z)}$ (2) where n is the particle concentration on the level of the area under consideration, V_s is the sedimentation rate, $\frac{dn}{dz}$ is the vertical concentration gradient, and D_{tp} is the coefficient of vertical turbulent diffusion of the particles. The turbulent diffusion coefficient D_{tm} of the fluid was calculated from $D_{tm} = k\nu_t$, where k is a proportionality factor (~ 1), and ν_t is the coefficient of

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Vertical distribution ... S/057/62/032/002/022/022
B124/B102

turbulent viscosity. Objections were raised to this method of calculating D_{tm} and to the comparison of D_{tp} with D_{tm}. The second objection has been answered with reference to Tchen's theorem, according to which D_{tp} is independent of the particle size, and is thus equal to D_{tm}. This means that the rate of particle pulsation increases with decreasing size or, more exactly, with the relaxation time, , but their persistence of motion simultaneously increases, so that these two effects compensate each other. With constant D_{tp}, $\ln \frac{n}{n_o} = -\frac{V_s z}{D_{tp}}$ (3) is obtained from Eq. (2). B. N. Brounshteyn and O. M. Todes (Ref. 10: ZhTF, 23, 110, 119, 1953; Ref. 11: Sb. trudov GIPKh po fizich. khimii, p. 126, Goskhimizdat, 1960) have derived the relation $\ln \frac{n}{n_o} = -\frac{3gz}{\overline{v^2}}$ (4) for vertical particle distribution, where g is the gravitational acceleration, and $\overline{v^2}$ is the mean square of the pulsation rate of the particles. For Brownian movement, these authors have found that

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particles. For turbulent flow, however, $D_{tp} = \frac{1}{3}\overline{v^2} L_p$, where L_p is the Lagrangian of the pulsating motions of the particles. Thus, the correct equation for the present case is

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Vertical distribution ... S/057/62/032/002/022/022
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$\ln \frac{n}{n_o} = -\frac{\tau g z}{D_{tp}} = -\frac{3\tau g z}{\overline{v^2} L_p}$ (8). As L_p is usually much greater than τ, increased values are obtained for the concentration gradient of very small particles. There are 14 references: 7 Soviet and 8 non-Soviet. The four most recent references to English-language publications read as follows: Tchen Chan-Mou. Mean Value and Correlation Problems Connected with the Motion of Small Particles Suspended in a Turbulent Fluid, The Haag, 1947; S. L. Soo, Chem. Engng. Sci., 5, 57, 1956; Vi-Cheng Liu. J. Meteor. 13, 399, 1956; S. Soo, C. Tien, V. Cadambi, Rev. Sci. Instr. 30, 821, 1959.

ASSOCIATION: Fiziko-khimicheskiy institut im. Karpova, Moskva (Physico-chemical Institute imeni Karpov, Moscow)

SUBMITTED: February 10, 1961

Card 4/4

S/020/62/147/005/030/032
B101/B186

AUTHORS: Fuks, N. A., Stechkina, I. B.

TITLE: Theory of fibrous aerosol filters

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 147, no. 5, 1962, 1144-1146

TEXT: This is a discussion on the sedimentation of aerosol particles on a cylindrical fiber, perpendicular to the flow direction, calculated by I. Langmuir (OSRD Rep. N 865 (1942)) and C. N. Davies (Proc. Inst. Mech. Eng., IB, 185 (1952)). Calculations for a system of parallel fibers made by J. Happel (Am. Inst. Chem. Eng. J., 5, 174 (1959)) and S. Kuwobara (J. Phys. Soc. Japan, 14, 527 (1959)) are also discussed. A method given by G. L. Natanson (DAN, 112, 100 (1957)) for an isolated cylinder was applied to calculate the accumulation factor for a system of parallel cylinders under the condition $Pe = 2U_0a/D \gg 1$, where Pe is the Peclet number, D is the diffusion coefficient, U_0 is the flow velocity far from the filter, and a is the cylinder radius. Results: $E = 2.9(-0.5 \ln\alpha - \lambda)^{-1/3} Pe^{-2/3}$, where $\alpha = 1 - \varepsilon = (a/b)^2$, ε is the filter porosity, and λ is an empirical

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Theory of fibrous aerosol filters S/020/62/147/005/030/032
B101/B186

constant. A comparison of the values calculated from this equation with those obtained by Natanson, and with experimental data obtained by S. C. Stern, H. W. Zeller, and A. I. Schekman (J. Coll. Sci., 15, 546 (1960)) shows that the values calculated for an isolated fiber are too low, whereas those obtained from the above equation approach the values calculated by Stern et al. and also those by D. G. Thomas, and C. E. Lapple (Am. Inst. Chem. Eng. J., 7, 203 (1961)). There is 1 figure.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute imeni L. Ya. Karpov)

PRESENTED: July 21, 1962, by A. N. Frumkin, Academician

SUBMITTED: July 12, 1962

Card 2/2

FUKS, N.A.; STECHKINA, I.B.; STAROSEL'SKIY, V.A.

Determining the distribution of aerosols by size, using the diffusion method. Inzh.-fiz.zhur. 5 no.12:100-103 D '62. (MIRA 16:2)

1. Fiziko-khimicheskiy institut imeni L.Ya.Karpova, Moskva.
(Aerosols) (Particle size determination)

FUKS, N.A.; STECHKINA, I.B.

Resistance of a gaseous medium to the movement of particles having a size comparable to the mean free path of gas molecules. Zhur.tekh.fiz. 33 no.1:132-135 Ja '63. (MIRA 16:2)

1. Nauchno-issledovatel'skiy fiziko-khimicheskiy institut imeni L.Ya.Karpova, Moskva.
(Molecular dynamics) (Hydrodynamics)

YANKOVSKIY, S.S.; FUKS, N.A.

Method of disperse analysis of aerosols on the basis of their aerodynamic properties. Sbor. nauch. trud. [illegible] no.20:7-29 '63. (MIRA 17:12)

FUKS, N.A.; SUTUGIN, A.G.

Droplet size distribution in dibutyl phthalate mists obtained by the method of condensed nuclei. Koll. zhur. 25 no.4:487-493 Jl-Ag '63. (MIRA 17:2)

1. Fiziko-khimicheskiy institut imeni Karpova, Moskva.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000513910002-0"

L 41760-65 EWT(1)/FCC GW

ACCESSION NR: AP4033022 S/0049/64/000/004/0579/0586

7
6
B

AUTHOR: Fuks, N. A.

TITLE: Stationary charge distribution of aerosol particles in bipolar ionized atmosphere

SOURCE: AN SSSR. Izvestiya. Seriya geofizicheskaya, no. 4, 1964, 579-586

TOPIC TAGS: stationary charge distribution, aerosol particle, bipolar ionized atmosphere, aerosol charge, stationary diffusion

ABSTRACT: The stationary distribution of aerosol particles of various dimensions in a symmetric, bipolarly ionized atmosphere has been studied in the absence of an external field but with ion concentration discontinuity at the particle surface. For the latter a "boundary sphere" model has been used with radius δ-differing from the particle radius a by

$$\frac{\delta}{a}=\frac{a^2}{\lambda^2}\left[\frac{\left(1+\frac{\lambda}{a}\right)^5}{5}-\frac{\left(1+\frac{\lambda^2}{a^2}\right)\left(1+\frac{\lambda}{a}\right)^3}{3}+\frac{2}{15}\left(1+\frac{\lambda^2}{a^2}\right)^{5/2}\right]$$

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where λ - ion mean free path. This leads to an expression for stationary ion diffusion given by

$$I = \frac{\pi\bar{c}\delta^2 n_0 \exp\left[-\frac{\varphi(\delta)}{kT}\right]}{1+\exp\left[-\frac{\varphi(\delta)}{kT}\right]\frac{\alpha\bar{c}\delta^2}{4D}\int\limits_{\delta}^{\infty}\frac{1}{\rho^2}\exp\left[\frac{\varphi(\rho)}{kT}\right]d\rho} = \frac{4\pi a D n_0}{\frac{4Da}{\alpha\bar{c}\delta^2}\exp\left[\frac{\varphi(\delta)}{kT}\right]+\Psi},$$

where

$$\Psi = a\int\limits_{\delta}^{\infty}\frac{1}{\rho^2}\exp\left[\frac{\varphi(\rho)}{kT}\right]d\rho = \int\limits_{0}^{a/\delta}\exp\left[\frac{\varphi(a/x)}{kT}\right]dx.$$

Here α is a function of a/δ determining the fraction of ions colliding with the particle, and $\varphi(\rho)$ is the ion potential energy. Using this equation, the stationary charge distribution on the aerosol is tabulated for ion mobility values (at 20C) of 1.6 cm^2/volt·sec, leading to O_2 and N_2 diffusion coefficient D of 0.20. The use of Boltzmann's formula, as suggested by some authors, is theoretically

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unsuitable for computing particle distribution. Practically, the formula may be used only for particles with a radius of $3 \cdot 10^{-5}$ cm. Estimates using the Boltzmann formula show that charge distribution values are underestimated in comparison to the above method and overestimated if the ion concentration discontinuity at the aerosol surface is neglected. The stationary ion distribution around the particle is also represented graphically for $a = 10^{-5}$ to 10^{-6} cm and various values of i (particle charge) in nondimensional coordinates n/n_0 and ρ/a (see Fig. 1 on the Enclosure). Orig. art. has: 15 formulas, 2 figures, and 2 tables.

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. Karpova (Scientific Research Physicochemical Institute)

SUBMITTED: 24Jul63 ENCL: 01 SUB CODE: SS

NO REF SOV: 004 OTHER: 010

FKK

Card 3/4

FUKS, N.A.; SELIN, A.N.

Dispersion of powders by air. Inzh.-fiz. zhur 7 no.1:123-126 Ja '64. (MIRA [illegible])

1. Fiziko-khimicheskiy institut imeni L.Ya.Karpova, Moskva.

FUKS, N.A.; SUTUGIN, A.G.

Highly disperse aerosols. Koll.zhur. 26 no.1:110-116 Ja-F '64.
(MIRA 17:4)

1. Fiziko-khimicheskiy institut imeni Karpova, Moskva.

L 1875-66 EWT(m)/EWP(j) RM

ACCESSION NR: AP5022513 UR/0303/65/000/004/0050/0057
667.644.3

AUTHOR: Gubenskiy, V. A.; Fuks, N. A.
44,5 44,55

44
B

TITLE: Determination of the size and charge of individual particles in the electrostatic atomization of organic coating materials
15 18 44,55

SOURCE: Lakokrasochnyye materialy i ikh primeneniye, no. 4, 1965, 50-57

TOPIC TAGS: atomization, charged particle, varnish, optic measurement
15

ABSTRACT: A variant of an oscillographic method and an instrument were developed for determining the size and charge of individual particles during electrostatic atomization of organic coating materials. The limits of the measurements 17 are r (radius) = 1-70 microns and q = 10^3—10^6 electronic charges. Charges below 10^3 e. c. can also be measured. The sign of the charge on a particle is determined from the asymmetry of the trajectories when a weak constant field is applied on an alternating electric field (a sinusoidal voltage being used), or from the shape of the particle trajectories when a rectangular constant voltage is used. The instrument is also suitable for studying both liquid and solid individual charged particles obtained by other methods of atomization and charging. The size of un-

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L 1875-66
ACCESSION NR: AP5022513

charged particles can be measured when pulsed illumination sources are employed. It is shown that in the case of optimum physicochemical properties of the liquids and optimum electrostatic atomization parameters, the curves of size distribution approach a lognormal distribution. The charge on the particles was found to increase with the radius r; the dependence of the charge on the radius is expressed by a parabolic curve and generally obeys the exponential function $q = a r^n$, in which constants a and n depend on the properties of the liquids and conditions of electrostatic atomization. Orig. art. has: 9 figures.

ASSOCIATION: None

SUBMITTED: 00 ENCL: 00 SUB CODE: OC, GC, MT

NO REF SOV: 007 OTHER: 004

mlr

Card 2/2

FUKS, N.A.; SUTUGIN, A.G.

Monodispersed aerosols. Usp.khim. 34 no.2:276-299 F '65. (MIRA 18:5)

1. Fiziko-khimicheskiy institut imeni Karpova, Moskva.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000513910002-0"

L 35391-66 EWT(m)/T DS/WW

ACC NR: AP6026840 SOURCE CODE: UR/0069/66/028/001/0131/0138

AUTHOR: Fuks, N. A.; Sutugin, A. G.

26
25
B

ORG: Scientific Research Physico-Chemical Institute im. L. Ya. Karpov (Nauchno-issledovatel'skiy fiziko-khimicheskiy institut)

TITLE: Coagulation constants of highly dispersed aerosols

SOURCE: Kolloidnyy zhurnal, v. 28, no. 1, 1966, 131-138

TOPIC TAGS: aerosol chemistry, diffuser, vapor condensation, chemical kinetics

ABSTRACT: By nephelometry carried out on mists formed during "development" of highly dispersed aerosols, the degree of coagulation of NaCl aerosols with particles having an average radius of 25 and 45 Å was determined after the aerosols had been passed through a tube with a diffuser. Development took place by condensation of dibutyl phthalate vapor on them in a special apparatus. Before development of the initial aerosols, which had a high particle concentration (10^6-10^7 cm $^{-3}$), the mists were diluted by a factor of 100-1000 to facilitate nephelometric and ultramicroscopic determinations. The average residence time of the aerosol in the tube was determined by blowing out the tube with an oil mist of high optical density and low dispersity and measuring the increase in concentration of the mist at the tube outlet in relation to time. On the basis of the data obtained, the coagulation constants of the

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UDC: 541.182.2/.3

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Card 2/2 bdh

L 44413-66 EWT(1)/EWT(m)/T DS/WW/RO/GW

ACC NR: AP6024433 SOURCE CODE: UR/0362/66/002/007/0770/0771

38
B

AUTHOR: Fuks, N. A.; Strel'tsov, L. V.

ORG: Physicochemical Institute im. L. Ya. Karpov (Fiziko-khimicheskiy institut)

TITLE: Methodology of investigating large-particle aerosol settlings in th surface boundary layer of the atmosphere

SOURCE: AN SSSR. Izvestiya. Fizika atmosfery i okeana, v. 2, no. 7, 1966, 770-771

TOPIC TAGS: aerosol chemistry, atmosphere, aerosol, aerosol particle

ABSTRACT: A method of fractionation developed at the Institute for Applied Geophysics (Institut prikladnoy geofiziki) for investigation of the settling of large aerosol particles in the surface layer of the atmosphere has been modified and improved by the authors in order to make it suitable, without laboratory facilities, for investigations of toxic chemical particles deposited by spraying and dusting for various purposes. The main changes in the process were the use of slurry instead of powder, making it possible to obtain clearly defined fractions, and the use of alcohol solutions

 UDC 551.508.91

FUKS, N.L.

Experience obtained in the operation of assemblies for absorption of the excess energy of recuperation. Elek.i tepl.tiaga 3 no.9:8-9 S '59. (MIRA 13:2)

1. Nachal'nik otdela ekspluatatsii sluzhby elektrifikatsii energeticheskogo khozyaystva, g.Irkutsk.
(Electric railroads--Equipment and supplies)

FUKS, N.L.

How to prevent inverse current flow in contact network systems.
Elek. i tepl. tiaga 7 no.6:8-9 Je '63. (MIRA 16:9)

1. Glavnyy inzh. sluzhby elektrifikatsii i energeticheskogo khozyaystva Vostochno-Sibirskoy dorogi.
(Electric railroads--Wires and wiring)

TARASENKO, V.T. (Irkutsk); FUKS, N.L. (Irkutsk)

Increasing the reliability of electric power supply systems.
Zhel. dor. transp. 45 no.6:76-79 Je '63. (MIRA 16:7)

1. Nachal'nik sluzhby elektrifikatsii i energeticheskogo khozyaystva Vostochno-Sibirskoy dorogi (for Tarasenko).
2. Glavnyy inzh. sluzhby elektrifikatsii i energeticheskogo khozyaystva Vostochno-Sibirskoy dorogi (for Fuks).
(Electric railroads—Substations)

VITYUGIN, V.M.; FUKS, O.A.

Distribution of chromium oxide in the products of treatment of ilmenite. Izv. TPI 126:98-101 '64. (MIRA 18:7)

KRAYTSBERG, M.I., kand. tekhn. nauk; FUKS, P.A., inzh.

Selecting the power of electric motors for machines operating with random load. Vest. mashinostr. 44 no.10:26-28 O '64. (MIRA 17:11)

GUDZOVSKIY, G.A.; FUKS, P.M.

Carrying out a mass examination of workers in the mining indystry of Kirghizistan. Sov.zdrav.Kir. no.2: 35-37 Mr-Ap '58. (MIRA 12:12)

1. Iz kafedry obshchey gigiyeny (ispolnyayushchiy obyazannosti zaveduyushchego - dotsent G.A. Gudzovskiy) i kafedry fakul'tetskoy terapii (zav. - zasluzhennyy deyatel' nauki, prof. M.Ye. Vol'skiy) Kirgizskogo gosmedinstituta.
(KIRGHIZISTAN--MINERS--DISEASES AND HYGIENE)

FUKS, R.

Austrian spotted type of cattle in connection with the importation and breeding of Simmethals in the lowlands of Southern Bosnia. p. 296.
(GLASNIK, Vol. 5, No. 7, July 1956 (Publishd 1957)

SO: Monthly List of East European Accessions (EEAL) LC Vol. 6, No. 12, Dec. 1957
Uncl.

KLEBANOV, M.A., prof. (Kiyev); Prinimali uchastiye: BEREZITSKIY, A.V. (Kiyev); PEKAR', P.P.; SAVENKOV, D.I.; TARANENKO, M.I.; MELAMED, M.A.; BORSHCHEVSKIY, M.L. (Odessa); VIL'NYANSKIY, L.I. (Khar'kov); SOKOLOVA, Yu.I. (Khar'kov); ABERMAN, A.A.; KULAKOVA, S.A. (Simoferopol'); FUKS, R.A. (Dnepropetrovsk); BEZNOSOVA, Zh.A. (Vinnitsa); KUKLINA, N.P. (Zhitomir); SIDORENKO, G.P. (Chernovitsy); D'YACHENKO, N.S. (Stanislav).

Reduction in the periods of therapeutic pneumothorax following its use in combination with antibacterial therapy. Vrach. delo no.12: 36-40 D '60. (MIRA 14:1)

1. Ukrainskiy institut tuberkuleza imeni F.G.Yanovskogo (for Klebanov).
2. Dispanser Yugo-Zapadnykh zheleznykh dorog (for Aberman).
(PNEUMOTHORAX) (TUBERCULOSIS)

FUKS, S. I.

Author: Fuks, S. I.

Title: Hard alloys and their application in high-speed cutting. (Tverdye splavy i ikh primenenie pri skorostnom rezanii.) 76p.

City: Kiev

Publisher: State Scientific-Technical Publication of Machine Construction Literature.

Date: 1950

Available: Library of Congress

Source: Monthly List of Russian Accessions, Vol. 4, No. 5, p. 315

FUKS, S. I.

Tverdye splavy i ikh primenenie pri skorostnom rezanii. Kiev, Mashgiz, 1950. 76, (2) p. diagrs.

Bibliography: p. 77.

Using hard alloys for high-speed cutting.

SO: Manufacturing and Mechanical Engineering in the Soviet Unicn, Library of Congress, 1953.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000513910002-0"

FUKS, S.I., kandidat tekhnicheskikh nauk, dotsent; BRAUN, M.P., doktor tekhnicheskikh nauk, redaktor; LEUTA, V.I., inzhener, redaktor; RUDENSKIY, Ya.V., tekhnicheskiy redaktor

[Heat treatment of cast iron] Termicheskaia obrabotka chuguna. Kiev, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1954. 144 p. (MLRA 8:3)

(Cast iron) (Metals—Heat treatment)

8.(3), 18 (3)

AUTHOR: Fuks, S. I. SOV/163-59-2-44/48

TITLE: The Metal for Steel Overhead Lines (Metall dlya stal'nykh provodov vozdushnykh liniy svyazi)

PERIODICAL: Nauchnyye doklady vyssney shkoly. Metallurgiya, 1959, Nr 2, pp 238 - 244 (USSR)

ABSTRACT: The behavior of the metal used at present in the USSR for steel lines, and their zinc-coating, was compared with samples of lines in or out of operation with different degrees of wear. The fine structure of the steel is shown in figure 1. The durability of the zinc coat amounts to 2-3 years in industrial areas, to 5-6 years in town areas. The rates of corrosion in individual areas are indicated in table 1. An increase in durability by a thicker zinc coat is inconvenient since zinc is a rare substance. An increase in the corrosion resistance of steel is more convenient. Figure 2 shows the favorable influence of phosphorus (0.1%) extending the durability by 50-100%. Table 2 indicates the mechanical properties and the electric resistance of old, not zinc-coated lines with different contents of phosphorus. A recrystallizing annealing at 650-700° would produce a more favorable fine structure (Fig 3): uniform fine ferrite

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The Metal for Steel Overhead Lines

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with a small quantity of granular or lamellar perlite. To improve the quality, it is also suggested to prepare a zinc layer with 0.3-1.5% P. Besides, operational tests are to be made with wire containing phosphorus and copper (0.06-0.10% P, 0.15-0.20% Cu). The hard upper layer of the cold-drawn wire is to be eliminated by annealing. Besides, more perfect manufacturing processes, such as inductive heating and hot drawing, are to be applied. There are 3 figures, 2 tables, and 8 Soviet references.

ASSOCIATION: Odesskiy politekhnicheskiy institut (Odessa Polytechnic Institute)

SUBMITTED: June 16, 1958

Card 2/2

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000513910002-0"

FUKS, S. L., Cand Tech Sci -- (diss) "Research into the process of heat exchange in compartments with large surfaces of external enclosures." Minsk, 1960. 17 pp; (Ministry of Higher and Secondary Specialist Education and Professional Education Belorussian SSR, Belorussian Polytechnic Inst im I. V. Stalin, Chair of Heat Supply and Ventilation); 200 copies; price not given; (KL, 26-60, 139)

FUKS, S.L., inzh.

Existing methods for calculating heat losses, their shortcomings and measures for creating comfortable conditions in buildings. Sbor. nauch. trud. Bel. politekh. inst. no.74:115-140 '59. (MIRA 13:8)

(Radiant heating)
(Heat--Radiation and absorption)

FUKS, S. N.

"Heat Emission During Condensation of Steam on Horizontal Pipes in the Presence of Air." Sub 16 May 51, All-Union Order of the Labor Red Banner Heat Engineering Sci Res Inst imeni F. E. Dzerzhinskiy

Dissertations presented for science and engineering degrees in Moscow during 1951.

SO: Sum. No. 480, 9 May 55

FUKS, S. N.

USSR/Engineering - Heat Transfer, Condensation   Nov 52

"Effect of the Air Admixture on Heat Transfer During Condensation of Moving Steam," Dr. Tech Sci L. D. Berman, Cand Tech Sci S. N. Fuks, Lab of Condensation Installat_ons

Iz V-S Teplotekh Inst, No 11, pp 11-18

Describes expts which corroborated previous conclusion that there is no well-defined relationship between relative change of heat transfer coeff and compn of steam-air mixt. Establishes that

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increase in velocity of mixt with high air content permits considerable intensification of heat exchange, this factor being essential in designing condensers for steam turbines and other condensers for vapor-gas mixts.

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248T79

5918. EXPERIMENTAL INCREASE OF NUMBER OF PASSES IN A CONDENSER. Novikov, Z.F. and Fuks, S.N. (Elekt. Sta. (Pwr Sta.), Moscow), June 1954, vol. 25, 9-11). Tests show that where the quantity of cooling water is limited the changeover from a two pass condenser to a four pass system provides substantial economy, which improves with the rise in cooling water temperature. Increase in the number of passes also permits a summer increase in the capacity of the turbine assembly. In changeover to the four pass system the extraction of the steam/air mixture is effected only from the air cooler situated in the first pass of the cooling water. Where the quantity of cooling water is insufficient careful control of cooling surface condition and air density is essential, especially in summertime, when a reduction in the vacuum may restrict turbine capacity.

D.E.A.

Fuks, S.N.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000513910002-0

Subject : USSR/Power Eng. AID P - 3891

Card 1/1 Pub. 110-a - 12/17

Author : Fuks, S. N., Kand. Tech. Sci., All-Union Heat Engineering Institute

Title : Surface cooling by individual areas in a new type of LMZ condensers.

Periodical : Teploenergetika, 11, 51-55, N 1955

Abstract : Research done on the operation of new type condensers for high pressure turbines is presented. Some defects in the design of the tube nest are explained and suggestions for improvements are made. Eight figures. Two Russian references, 1947-1953.

Institution : None

Submitted : No date

FUKS, S.N., kandidat tekhnicheskikh nauk.

Efficient distribution of cooling water through pipes of surface condensers. Elek.sta.26 no.1:14-18 Ja '55. (MLRA 8:3)
(Condensers (Steam))

FUKS, S.N., kandidat tekhnicheskikh nauk.

Annealing of condenser tubes of steam turbines. Energetik 4 no.1:22-24 Ja '56. (MIRA 9:4)

(Condensers (Steam))

AID P - 4957

Subject : USSR/Engineering

Card 1/1 Pub. 110-a - 6/21

Authors : Berman, L. D., Dr. Tech. Sci., and S. N. Fuks, Kand. Tech. Sci.

Title : Improving the water seal of steam condensers used with superhigh pressure turbines.

Periodical : Teploenergetika, 8, 25-31, Ag 1956

Abstract : Methods are examined for improving the joints between condenser tubes and headers. The composition of alloys used for condenser tubes is given in Table 2. 2 tables, 10 diagrams.

Institution : All-Union Heat Engineering Institute

Submitted : No date

2

21.

7232* (Russian.) Heat Transfer in Condensation of Steam Flowing in a Horizontal Group of Tubes. Teplootdacha pri kondensatsii dvizhushchegosia para v gorizontal'nom trubnom puchke. S. N. Fuks. Teploenergetika, v. 4, Jan. 1957, p. 35-38.

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FUKS, S.N.

2

1-Yeld,

2005. CHARACTERISTICS OF [illegible] CONDENSER [illegible]. Fuks, S.N. (Elekt. Sta. (Pwr Sta., Moscow), Jan. 1957, Vol. 28, 29-32). The results are given of tests with this all-welded, two-pass condenser which, having 3,880 brass tubes 22-24 mm in diameter and 6000 mm long, presents a cooling surface of 1,750 sq.m on the steam side. The condenser has low steam resistance, (2.6 mm mercury at rated steam load and 0.05 atm pressure) and the lower steam load as compared with earlier types of condenser enables a higher vacuum to be obtained. The characteristics of the condenser are adjustable to conditions outside the tested range.

Cand. Tech. Sci.

SOV/96-58-8-14/22

AUTHORS: Berman, L.D. (Doctor of Technical Science) and Fuks, S.N. (Candidate of Technical Science)

TITLE: Mass Exchange in Condensers with Horizontal Tubes when the Steam contains Air (Massoobmen v kondensatorakh s gorizontal'nymi trubami pri soderzhanii v pare vozdukha)

PERIODICAL: Teploenergetika, 1958, Nr 8, pp 66-74 (USSR)

ABSTRACT: Values of the heat-transfer coefficient related to the mean logarithmic temperature difference of steam and water are used in calculations on steam condensers and similar equipment but are not well defined because the steam contains gas, mainly air. The influence of mass exchange on the intensity of steam condensation is very complicated and the heat-transfer coefficient depends on the design of the condenser and of the air pump or ejector. Even the best of the empirical formulae do not allow accurately for all the factors that influence the heat-transfer coefficient. Experimental data for the mean coefficient, though useful, are not always adequate, particularly when comparing different designs and equipment. It is, therefore, important to accumulate the necessary experimental data

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SOV/96-58-8-14/22

Mass Exchange in Condensers with Horizontal Tubes when the Steam contains Air

for the determination of local values of heat- and mass-transfer coefficient. The All-Union Thermo-Technical Institute accordingly carried out three series of tests in 1950-1952, and a fourth series in 1956-1957, on the condensation of steam in the presence of air. The tests are applicable to apparatus with horizontal tubes. Earlier work gave local values of heat-transfer coefficient from the steam side, but it was very difficult to investigate mass exchange because the parameters of the condensate film and of the steam-air mixture at the phase boundary (Fig 1) could not be measured directly. According to the kinetic theory, there should be temperature and pressure jumps at the phase boundary, but they are not revealed even at very low pressures. This can be understood on the basis of recent American work, and it is now evident that these jumps may be neglected at the pressures now under discussion. The authors have already shown that equations can be formulated for heat-transfer during the condensation of moving pure steam;

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SOV/96-58-8-14/22

Mass Exchange in Condensers with Horizontal Tubes when the Steam contains Air

during the tests in which the expressions were derived work was also done on a steam-air mixture. A further problem was that the experimental conditions were such that it was not possible to use the usual dimensionless relationships for the coefficient of mass-transfer based on the approximate analogy between heat- and mass-transfer. Later work, published in Teploenergetika Nr 5, 1954 and Nr 8, 1955, gave an expression for the mass-transfer coefficient during the condensation of steam from a moving steam-gas mixture. When these expressions had been derived it became possible to work out test results to obtain generalised relationships for mass-transfer coefficients. The experimental equipment for the first three series of tests used a closed steam-condensing circuit (see Fig 2a). The experimental condenser was of rectangular section with internal dimensions of 309 x 522 mm. Firstly two brass tubes were installed, a main and a control tube (Fig 3a). Then to obtain higher velocities the width of the working part of the condenser was reduced

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to 80 mm and only one tube was used (Fig 3b). Next a tube bundle in an 11-row honeycomb arrangement was fitted in the condenser (see Fig 3). In all cases the outside diameter of the tubes was 19 mm and the active length 522 mm. The fourth series of tests was run to obtain data at high air-concentrations and lower speeds; for this the equipment could be somewhat simplified (see Fig 2b). The tube bundle arrangement for this test is shown in Fig 3. The measuring techniques used in the tests are described, and the mathematical treatment applied to the results is explained. During the tests the pressure of the steam-air mixture ranged from 0.047 - 0.91 atms. The ranges of variation of the other main parameters are set out in Table 1. By way of example, Table 2 gives the results for the fourth series of experiments with the Reynolds number greater than 350. Although the data were varied over a wide range, the mass exchange data for the region of Reynolds number greater than 350 could be expressed by the single equation (8). The test results for values of Reynolds number greater than 350 are given in Figs 5 - 9.

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Mass Exchange in Condensers with Horizontal Tubes when the Steam contains Air

In Figs 5, 6 and 9 most of the experimental points lie within ± 15% of the mean line. In determining mass-transfer coefficients there are, in addition to the ordinary errors of measurement, others associated with the indirect method of determining the parameters on the phase boundary. With this in mind, the results obtained may be considered satisfactory. The curves are discussed at some length. Those for the fourth series of tests, for Reynolds numbers ranging from 40 - 350, are seen in Fig 10. The equation corresponding to the mean line is given, but it must be regarded as tentative and subject to future correction. It should be used only for a first approximation, in conjunction with equation (5). A combined graph of the results of the four series of experiments is given in Fig 11. It is concluded that the tests confirmed that the mass-transfer coefficient during condensation depends on the air content of the mixture and on another criterion as well as on the Reynolds and Prandtl numbers. With decreasing gas content, the coefficient rises rapidly and tends to infinity as the

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SOV/96-58-8-14/22

Mass Exchange in Condensers with Horizontal Tubes when the Steam contains air

conditions of condensation of pure steam are approached. Compared to the purely empirical formulae, the equations now given for the mass-transfer coefficient make possible more reliable determinations of the general coefficient of heat-transfer from a steam-air mixture to the tube walls under various conditions.

There are 11 figures, 2 tables, 14 literature references (11 Soviet, 2 English, 1 German)

ASSOCIATION: Vsesoyuznyy teplotekhnicheskiy institut (All-Union Thermo-Technical Institute)

1. Steam condensors--Design 2. Steam condensors--Mathematical analysis 3. Steam condensors--Heat transfer

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PHASE I BOOK EXPLOITATION SOV/5071

Usovershenstvovaniye konstruktsiy i ekspluatatsii turbinnykh ustanovok; sbornik statey (Improvement in the Construction and Operation of Turbine Units; Collection of Articles) Moscow, Gosenergoizdat, 1959. 500 p. Errata slip inserted. 1,550 copies printed.

Eds. (Title page): Ya. M. Rubinshteyn, Professor, and A. V. Shcheglyayev, Corresponding Member, Academy of Sciences USSR; Ed. (Inside book): L. S. Sinel'nikova; Tech. Ed.: P. M. Asanov.

PURPOSE: The book is intended for engineers specializing in the design and operation of turbine equipment.

COVERAGE: This collection of 22 articles deals with aspects of turbine operations, particularly, variations in the heat performance of steam turbines and computation of optimum parameters for gas turbines. Turbine performance indices and a number of methods for more accurate determination of control parameters for specific cycles are presented. No personalities are mentioned. References follow several of the articles.

AVAILABLE: Library of Congress

SOV/96-59-7-16/26

AUTHORS: Berman, L.D., Doctor of Technical Sciences, and Fuks, S.N., Candidate of Technical Sciences

TITLE: The Design of Surface Heat-exchange Equipment for Condensing Steam from a Steam/air Mixture. (Raschet poverkhnostnykh teploobmennykh apparatov dlya kondensatsii para iz parovozdushnoy smesi)

PERIODICAL: Teploenergetika, 1959, Nr 7, pp 74-84 (USSR)

ABSTRACT: In calculating the surface of heat-exchange equipment when one of the fluids is a liquid and the other is steam with a certain quantity of inert gas, allowance must be made for several factors. They are: the composition and rate of flow of the steam/gas mixture; differences of temperature and partial pressure along the path of the moving mixtures; and also differences between local heat- and mass-transfer coefficients along the path. The whole problem is very complicated and naturally there have been many attempts to simplify the calculations. These are reviewed and it is concluded that in every case the simplification is based on an insufficiently clear understanding of the mechanism of the process. As a result, the

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The Design of Surface Heat-exchange Equipment for Condensing Steam from a Steam/air Mixture

usual simplifications may give rise to very great errors in the calculations. However, it is shown in the course of the article that if experimental relationships are used for the heat- and mass-transfer coefficients it is possible to introduce certain simplifiaations into the calculations. In particular for the case of condensing steam containing air there is practically no need to make the laborious simultaneous determination of two inter-related temperatures. The procedure described in the article is based on the use of experimental relationships: it is assumed that the conditions are such that the quantity of heat transmitted from the steam/gas mixture to the condensate film by convection and the heat evolved in cooling the condensate may both be neglected, as they are small compared with the heat of phase conversion. Changes in the total pressure of the system resulting from the resistance of the heat-exchanger tubes is also neglected. The data usually provided for the purpose of making the calculations is then listed and formula (1) is given for the specific thermal loading of the heating surface. The coefficient of dynamic viscosity of a saturated mixture of steam and air enters into the calculations and may be obtained from the graph in Figure 2. A knowledge is also required of the heat-transfer coefficient from the water flowing in a tube to the tube walls, and may be obtained from the nomogram in Figure 3. Equation (11) is then derived: the complex C given by equation (11a) may be obtained from the graphs in Figure 4. It should be remembered that the basic equations (2), (3) and (4) were determined experimentally for horizontal bundles of tubes of a given pitch; care must be exercised in applying them to other arrangements of tubes. Moreover, formula (10) can be applied to vertical tubes only if there is laminar flow of the condensate film. By way of illustration a numerical example is given of a specific calculation of the cooling surface required for the first-stage cooler of a steam-jet injector. The necessary numerical values are given. The cooler surface is sub-divided into six

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The Design of Surface Heat-Exchange Equipment for Condensing Steam from a Steam/air Mixture

sections which may be treated separately. The sections are then considered in turn and values are derived for the specific thermal loading. The calculations are repeated for a number of tube outside-wall temperatures and the results for the first of the sections are given in Table 1. Calculations on the second and successive sections are made in just the same way; the results are given in Table 2 for two variants of cross-sectional area of the steam/air duct. In the first variant the cross-section remains constant throughout and as the steam condenses the speed of the mixture falls. In the second, the cross-section diminishes as the steam condenses, so that the speed remains constant. For the first variant, which is commonly found in practice, the necessary cooler surface is 7.89 square metres, but for the second variant it is only 5.45 square metres. The results of the calculations are used to determine the number of tubes, their arrangements and other details. When examined, the results of the calculations show that the

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experimental value of the mean heat-transfer coefficient and of the heat-transfer coefficient from the steam side, obtained from balancing tests such as are usually quoted in the literature, has little meaning. To prove the point, these coefficients are calculated for each of the six sections with both variants and the results are given in Table 3. The variations in local heat-transfer coefficients and heat-transfer coefficients from the steam side as a function of the temperature difference between the mixture and water are plotted in Figure 6 and 7 for variants 1 and 2 respectively. It is shown that for the case of condensing steam containing inert gas the usual determination of the mean temperature difference does not correspond to the realities of the process and can lead to very contradictory results. The conclusions about the general inadequacy of the usual methods of calculation are fully confirmed by test results. It is quite erroneous to attempt to 'correct' values of the heat-transfer coefficient related to the mean logarithmic temperature difference by

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The Design of Surface Heat-exchange Equipment for Condensing Steam from a Steam/air Mixture

allowing for the reduction in temperature of the steam/air mixture as it condenses. Different methods of calculating the mean surface heat-transfer coefficient from the steam side are compared in Table 4 and here again it is found that the usual coefficients are quite arbitrary. It follows that in designing heat-exchange equipment in which a gas/steam mixture is condensed use should be made of methods of the type described above, which are based on experimental relationships for local coefficients of heat- and mass-transfer. The calculations cannot yet be made for all the various conditions met in practice, for lack of experimental data. It is accordingly important to determine additional data for mixtures of various vapours and gases and for tubes of various diameters arranged in different ways.

There are 7 figures, 4 tables and 23 references, of which 11 are Soviet, 7 English, 4 German and 1 French.

ASSOCIATION: Vsesoyuznyy teplotekhnicheskiy institut (All-Union Thermo-Technical Institute)

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SOV/91-59-8-21/28

8(6)

AUTHORS: Berman, L.D., Doctor of Technical Sciences and 'aks, S.N., Candidate of Technical Sciences

TITLE: The Luminescent Method of Detecting Water Leaks in Steam Turbine Condensers

PERIODICAL: Energetik, 1959, Nr 8, pp 30-33 (USSR)

ABSTRACT: The author describes a method of detecting leaks in steam turbine condensers by filling the condenser with water in which a fluorescent material ($C_{20}H_{12}O_5$) has been dissolved. The interior of the condenser tubes is then inspected by means of a quartz lamp. Thir method is used since 1954 by VTI. It is based on descriptions in foreign periodicals ("Engineering", 1949 and "Power", 1950). The author describes this method in detail and gives recommendatins concerning the type of quartz lamp to be used. Mineraloscopes LYuM-1 and LYuM-2 equipped with mercury quartz lamps PRK-4 and ultraviolet light filters UFS-3 or UFS-4 may be used. The filters pass light of 320-400 millimicron wavelength. Luminescent mineraloscopes were produced by the plants "Krasnog-

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The Luminescent Method of Detecting Water Leaks in Steam Turbine Condensers

vardeyets" and "Geologorazvedka". Tables 1 and 2 contain data on mercury quartz lamps PRK-2, PRK-4, PRK-5, PRK-7 and PRK-8. The author states that this method is of great importance for high-power turbines. For example, with a 150 megawatt turbine PVK-150, a 0.001% suction will correspond to an amount of 3 liters/hour of water. For medium and high pressure turbines, the permissible suction of condenser water amounts to 0.1-0.3%, while boilers with superhigh steam parameters require 0.001-0.005%. There are 1 diagram, 1 circuit diagram, 2 tables and 4 references, 2 of which are English, 1 Soviet and 1 German.

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BERMAN, L.D., doktor tekhn.nauk; FUKS, S.N., kand.tekhn.nauk

Hermetic sealing of steam turbine condenser pipe plates. Elek.sta. 31 no.4:32-36 Ap '60. (MIRA 13:7)
(Steam-turbines)

FUKS, S.N., kand.tekhn.nauk

Breaking of cooling pipes in steam turbine condensers. Elek.sta. 31 no.7:20-25 Jl '60. (MIRA 13:8)
(Steam turbines)

BERMAN, Solomon Semenovich; FUKS, S.N., red.; BUL'DYAYEV, N.A., tekhn. red.

[Calculation of heat exchangers of turbine systems]Raschet teploobmennykh apparatov turboustanovok. Moskva, Gosenergoizdat, 1962. 239 p. (MIRA 16:2)
(Heat exchangers) (Steam turbines) (Gas turbines)

FUKS, S.N., kand.tekhn.nauk

Concerning G.V.Nikolaev's article "Comparative data on the magnitude of experimental heat transfer coefficients in condensers." Energomashinostroenie 9 no.4:44-45 Ap '63. (MIRA 16:5)
(Condensers (Steam)) (Heat—Transmission) (Nikolaev, G.V.)

FUKS, S.N., kand. tekhn. nauk

Study of the operation of the condenser of the K-150-130 KhTGZ turbine. Teploenergetika 10 no.8:10-16 Ag '63. (MIRA 16:8)

1. Vsesoyuznyy teplotekhnicheskiy institut.
(Condensers (Steam)) (Steam turbines)

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FUKS, S.N., kand. tekhn. nauk

Barometric vacuum gauge for measuring the pressure of spent steam of steam turbines. Energetik 11 no.8:14-16 Ag '63. (MIRA 16:10)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000513910002-0"

FUKS, S.N., kand.tekhn.nauk

Measurement of local water expenditures in tubular heat exchangers. Teploenergetika 11 no.2:91-95 F '64. (MIRA 17:4)

1. Vsesoyuznyy teplotekhnicheskiy institut.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000513910002-0"

FUKS, V. A.

"Non-Euclidian Geometry in the Theory of Conformal and Pseudo-Conformal Mapping," Moskva, Gos. izd-vo tekhn.-teoret. lit-ry, 1951

KAGAN, Vera Zinov'yevna; VINOGRADOV, N.V., doktor ekon. nauk, prof., retsenzent; DMITRIYEV, V.M., inzh., ekon., retsenzent; FUKS, V.K., red.; SATAROVA, A.M., tekhn. red.

[Economics and planning in the starch and mollases industry] Ekonomika i planirovanie krakhmalo-patochnoi promyshlennosti. Moskva, Pishchepromizdat, 1963. 277 p. (MIRA 16:7)
(Starch industry)

VAS'KO, T.P.; PLEVAKO, Ye.A., spetsred.; KUKS, V.K., red.; YAROV, B.M., tekhn. red.

[Use of spent grain in yeast products; practices of the Kiev Yeast Factory] Ispol'zovanie bardianoi zolki v drozhzhevom proizvodstve; iz opyta Kievskogo drozhzhevogo zavoda. Moskva, Pishchepromizdat, 1956. 22 p. (MIRA 11:9)
(Yeast)

VOLKOV, Leonid Mikhaylovich, VISHNEVSKIY ,, Serafin Mikhailovich, MOISEYEV, P.N., retsenzent, DONSKOV, V.Ye., retsenzent, TOLCHENOV, T.V. spets.red.; FUKS, V.K., red.; KISINA, Ye.I., tekhn.red.

[Organization of production in a tobacco factory] Organizatsiia proizvodstva na tabachnoi fabrike. Moskva, Pishchepromizdat, 1957. 93 p. (MIRA 11:9)

(Tobacco industry)

ZHIGALOV, A.N., kand. ekon. nauk; CHUKHAR'KO, Z.T., kand. ekon. nauk, retsenzent; LYUBUSHKIN, V.T., kand. tekhn. nauk, spetsred.; FUKS, V.K., red.; KISINA, Ye.I., tekhn. red.

[Utilization of the capital assents of state-owned rural mills] Ispol'zovanie osnovnykh fondov gosudarstvennykh sel'skokhoziaistvennykh mel'nits. Moskva, Pishchepromizdat, 1958. 122 p. (MIRA 11:8)
(Flour mills)

MASLOV, Ivan Nikolayevich; ZAPENINA, Nina Vasil'yevna; SOKOLOVA, Nina Ivanovna; SOKOLOVSKIY, A.L., prof., retsenzent; FUKS, V.K., red.; GOTLIB, E.M., tekhn.red.

[Manufacture of oriental candies and pastry] Proizvodstvo vostochnykh sladostei. Moskva, Pishchepromizdat, 1959. 97 p. (MIRA 12:12)
(Confectionery)

MUSOLIN, Konstantin Ivanovich; FUKS, V.K., red.; TARASOVA, N.M., tekhn.red.

[Nomographic calculations for the alcohol production processes; nomograms of the technology and technical and chemical control of the alcohol production] Nomograficheskie raschety spirtovogo proizvodstva; nomogramy po tekhnologii i tekhnokhimicheskomu kontroliu spirtovogo proizvodstva. Moskva, Pishchepromizdat, 1959. 133 p. (MIRA 13:5)

(Alcohol)

MOREYNIS, Yakov Izrailevich; BARKOVSKIY, N.D., retsenzent; SHVUIM, D.M., spetsred.; FUKS, V.K., red.; SOKOLOVA, I.A., tekhn.red.

[Financing and crediting of sugar industry enterprises] Finansirovanie i kreditovanie predpriiatii sakharnoi promyshlennosti. Moskva, Pishchepromizdat, 1959. 176 p. (MIRA 12:9)
(Sugar industry--Finance)